

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method for processing a plurality of digital streams, wherein each digital stream includes packets sequenced for continuous presentation, said method comprising:

receiving packets for each of said plurality of digital streams;

associating each of said packets with a respective stream of said plurality of digital streams;

assigning a priority to each packet, said priority being determined according to a delivery deadline for each of said packets; and

processing the packets from the plurality of data streams in order of priority determining that a subset of packets of one of said plurality of digital streams is to be processed before other subsets of packets.

2. (Currently amended) The method of claim 1, further comprising:

storing said received packets in a buffer.

3. (Currently amended) The method of claim 2, further comprising:

selecting said ~~subset of~~ packets for processing based on said priority; and

retrieving said selected ~~subset of~~ packets from said buffer.

4. (Currently amended) The method of claim 3, wherein:

said ~~subset of~~ packets is are retrieved in ~~an order received~~ of said priority.

5. (Currently amended) The method of claim 1, further ~~comprises~~ comprising:
assigning a priority to each of said plurality of digital streams.
6. (Currently amended) The method of claim 5, wherein:
said assigning of said priority to each packet further comprises determining the priority of the stream associated with each packet ~~said subset of packets to be processed based on said one of said plurality of digital streams being associated with a highest priority.~~
7. (Currently amended) The method of claim 5 1, wherein:
said priority is ~~representative of a~~ based on a current time interval before said deadline.
8. (Currently amended) The method of claim 7, wherein:
said deadline is derived from a Decoding Time Stamp extracted from an associated packet ~~header of an associated access unit.~~
9. (Currently amended) The method of claim 1, wherein:
said ~~subset of packets~~ of each digital stream are ~~sequenced, said subset of sequenced~~ arranged in sequences of packets constituting an access unit.
10. (Currently amended) The method of claim 9, wherein:
~~an access unit~~ each sequence of packets is a representation of a video frame.
11. (Currently amended) The method of claim 9, wherein:
~~an access unit~~ each sequence of packets is a representation of an audio frame.
- 12 (Currently amended) The method of claim ~~1~~ 2, further comprising:
assigning a tag to each to each packet identifying the assigned priority for the packet and an address of the packet in the buffer; and

storing each tag in a respective first-in-first-out memory (FIFO) corresponding to the respective digital stream associated with each packet.

~~determining another subset of said one of said plurality of digital streams is associated with a new access unit.~~

13. (Currently amended) The method of claim 12, ~~wherein~~ further comprising:

continuously monitoring the tag positioned at the output of each FIFO to identify the digital stream having the highest priority; and

retrieving the packet identified by the tag at the output of the FIFO corresponding to the identified highest priority stream from the buffer according to said address.

~~determining said another subset is associated with said new access unit further comprises adjusting a priority associated with said one of said plurality of digital streams.~~

14. (Currently amended) The method of claim 13, further comprising:

determining when a new tag is present at the output of a previously empty FIFO; and
establishing the priority of the digital stream corresponding to said new tag with respect to the priority of the digital streams represented by the other FIFOs.

~~wherein adjusting said priority occurs in response to a packet of said another subset being received as a first unprocessed packet.~~

15. (Currently amended) The method of claim 1, further comprising:

maintaining a state associated with each of said plurality of digital streams.

16. (Currently amended) The method of claim 15, wherein:

said state includes parameters for said processing of said subset packets of each stream.

17. (Currently amended) The method of claim 15, wherein:

said state includes pixel data representing at least one frame of video.

18. (Currently amended) The method of claim 15, further comprising:
allocating memory for storing said state.

19. (Currently amended) The method of claim 18, wherein:

said allocating memory includes recursively subdividing a said memory into quadrants ~~to form allocation units~~, where one of said ~~allocation units~~ is a quadrants ~~that~~ cannot be further subdivided without at least one dimension becoming smaller than ~~the~~ a corresponding dimension of a video or audio frame.

20. (Currently amended) The method of claim 18, wherein:

a said memory is allocated in pages, where each of said pages is a contiguous memory unit of a fixed size.

21. (Currently amended) The method of claim 20, wherein:

unallocated pages are managed using a free list configured to manage unused pages of memory.

22. (Currently amended) Apparatus for processing a plurality of digital streams, wherein each digital stream includes packets sequenced for continuous presentation, said apparatus comprising:

means for receiving packets for each of said plurality of digital streams;

means for associating each of said packets with a respective stream of said plurality of digital streams;

means for assigning a priority to each packet, said priority being determined according to a delivery deadline for each of said packets; and

means for processing the packets from the plurality of digital streams in order of priority
~~determining that a subset of packets of one of said plurality of digital streams is to be processed~~
~~before other subsets of packets of other digital streams.~~

23. (Currently amended) The apparatus of claim 22, further comprising:

a buffer for storing said received packets.

24. (Currently amended) The apparatus of claim 23, further comprising:

means for selecting said ~~subset of~~ packets for processing based on said priority; and

means for retrieving said selected ~~subset of~~ packets from said buffer.

25. (Currently amended) The apparatus of claim 22, further ~~comprises~~ comprising:

means for assigning a priority to each of said plurality of digital streams.

26. (Currently amended) The apparatus of claim 25, ~~further comprises~~ wherein:

said priority of each packet is further determined by the priority of the stream associated
with each packet.

~~means for determining said subset of packets to be processed based on said one of said~~
~~plurality of digital streams being associated with a highest priority.~~

27. (Currently amended) The apparatus of claim ~~22~~ 25, wherein:

said priority is ~~representative of a~~ based on a current time interval before said deadline.

28. (Currently amended) The apparatus of claim 26, further ~~comprises~~ comprising:

a means for extracting a Decoding Time Stamp from an associated packet header ~~of an~~
~~associated access unit~~, wherein said Decoding Time Stamp is used to derive said deadline.

29. (Currently amended) The apparatus of claim 22, further comprising:

means for assigning a tag to each to each packet identifying the assigned priority for the packet and an address of the packet in the buffer; and

a respective first-in-first-out memory (FIFO) for each respective digital stream for storing the tags assigned to the packets of the respective streams. ~~means for determining another subset of said one of said plurality of digital streams is associated with a new access unit.~~

30. (Currently amended) The apparatus of claim 29, ~~wherein~~ further comprising:

means for continuously monitoring the tag positioned at the output of each FIFO to identify the digital stream having the highest priority; and

means for retrieving the packet identified by the tag at the output of the FIFO corresponding to the identified highest priority stream from the buffer according to said address. ~~said means for determining said another subset is associated with said new access unit further comprises means for adjusting a priority associated with said one of said plurality of digital streams.~~

31. (Currently amended) The apparatus of claim 30, further comprising:

means for determining when a new tag is present at the output of a previously empty FIFO; and

means for establishing the priority of the digital stream corresponding to said new tag with respect to the priority of the digital streams represented by the other FIFOs.

~~means for adjusting said priority is in response to a packet of said another subset being received as a first unprocessed packet.~~

32. (Currently amended) The apparatus of claim 22, further comprising:

means for maintaining a state associated with each of said plurality of digital streams.

33. (Currently amended) The apparatus of claim 32, wherein:

said means for maintaining a state includes a memory for storing processing parameters.

34. (Currently amended) The apparatus of claim 32, wherein:

said means for maintaining said state includes memory for storing pixel data representing at least one frame of video.

35. (Currently amended) The apparatus of claim 34, further comprising:

means for recursively subdividing said memory into quadrants.

36. (Currently amended) The apparatus of claim 34, further comprising:

means for partitioning said memory into pages, where each of said pages is a contiguous memory unit of a fixed size.

37. (Currently amended) The apparatus of claim 36, further comprising:

a free list for managing unused pages of memory.

38. (Currently amended) The apparatus of claim 36, further comprising:

a translation look-aside buffer for mapping virtual addresses to physical page addresses.

39. (Currently amended) The apparatus of claim 36, further comprising:

means for retrieving pages from memory and merging data into blocks of a requested size.

40. (Currently amended) The apparatus of claim 39, further comprising:

a cache for storing one or more pages that have been retrieved from memory.

41. (Withdrawn) A method of processing a plurality of streams of data, the method comprising:

identifying a single stream of said plurality of streams; converting a subset of data corresponding

to said identified single stream from a first format to a second format; and classifying a next subset of data for said single identified stream.

42. (Withdrawn) The method of claim 41 further comprising maintaining a state associated with each of said plurality of streams.

43. (Withdrawn) The method of claim 42 wherein said state includes data that represents one or more of video, audio and non-A/V data.

44. (Withdrawn) A method of scheduling a plurality of streams of data, the method comprising: classifying a first subset of data associated with a first stream to distinguish said subset of data from a second subset of data associated with a second stream; and selecting only said first subset of data for conversion from a first format to a second format during a first interval of time.

45. (Withdrawn) The method of claim 44, further comprising converting from said first format to said second format during which no other of said plurality of streams are converted.

46. (Withdrawn) The method of claim 45, further comprising maintaining a state associated with said second subset during said first interval, wherein said state includes data that represents one or more of video, audio and non-A/V data.

47. (Withdrawn) The method of claim 46, wherein said data represents video and includes pixel data representing at least one frame of video.

48. (Withdrawn) The method of claim 44, wherein classifying said first subset of data comprises: prioritizing said first and said second subsets of data; and tagging said first and said second subsets of data with a first priority and a second priority, respectively.

49. (Withdrawn) The method of claim 48, wherein said first priority and said second priority represent respective priorities for a first stream and a second stream.

50. (Withdrawn) The method of claim 48, wherein said first priority is associated with a first duration of time to a first deadline and said second priority is associated with a second duration of time to a second deadline, where said first duration is shorter than said second duration.

51. (Withdrawn) An apparatus for converting each stream of a plurality streams, the method comprising: a classifier module configured to assign a tag indicating a priority to data of each packet for each of said plurality of streams; a buffer associated with each of said plurality of streams and configured to store a subset of tags; and a packet scheduler module configured to select only one of said plurality of streams for conversion from a first format to a second format during a first interval of time.

52. (Withdrawn) The apparatus of claim 51, wherein a first packet of a frame is lower in priority than a second packet of said frame of one of said plurality of streams.

53. (Withdrawn) The apparatus of claim 51, further comprising a priority queue module configured to store the relative priorities associated with one or more subsets of tags.

54. (Withdrawn) The apparatus of claim 53, wherein said priority queue module is configured to provide a range of priorities to said packet schedule module for scheduling the conversion of data of said packet from said first format to said second format.